

OBSIDIAN CREEK BRIDGE
Yellowstone Roads and Bridges
Spanning Obsidian Creek on
Indian Creek Campground Road
Yellowstone National Park
Park County
Wyoming

HAER No. WY-10

HAER
WYO
15 YELNAP,
10-

BLACK & WHITE PHOTOGRAPHS

REDUCED COPIES OF MEASURED DRAWINGS

WRITTEN HISTORICAL & DESCRIPTIVE DATA

Historic American Engineering Record
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P.O. Box 25287
Denver, Colorado 80225

HISTORIC AMERICAN ENGINEERING RECORD

OBSIDIAN CREEK BRIDGE

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Location: Spanning Obsidian Creek on Indian Creek Campground Road, just off Grand Loop Road south of Mammoth Hot Springs, Yellowstone National Park, Park County, Wyoming
UTM: Mammoth, WY, Quad. 12/521000/4969670

Date of Construction: 1910

Owner: Yellowstone National Park, National Park Service

Use: Vehicular bridge

Designer: U.S. Army Corps of Engineers

Builder: U.S. Army Corps of Engineers

Significance: Obsidian Creek Bridge is one of two remaining Army Corps of Engineers bridges in Yellowstone National Park. It represents the significant role that the Corps of Engineers played in the early years of road construction in the park.

Project Information: Documentation of Obsidian Creek Bridge is part of the Yellowstone Roads and Bridges Recording Project, conducted during the summer of 1989 by the Historic American Engineering Record, a division of the National Park Service, under the co-sponsorship of Yellowstone National Park, the NPS Roads and Bridges Program, and the NPS Rocky Mountain Regional Office, Denver. Historical research and written narrative by Mary Shivers Culpin, Historian, NPS Rocky Mountain Regional Office. Engineering description by Steven M. Varner, Virginia Polytechnic Institute. Edited and transmitted by Lola Bennett, HAER Historian, 1993.

DESIGN AND CONSTRUCTION OF OBSIDIAN CREEK BRIDGE

Completed in 1910, Obsidian Creek Bridge carries Indian Creek Campground Road over Obsidian Creek just off Grand Loop Road between Mammoth Hot Springs and Norris Junction. The bridge was constructed by the U.S. Army Corps of Engineers during their second phase of bridge construction in Yellowstone National Park. The Army engineers began the construction of roads and bridges in Yellowstone in 1883 and continued the work until 1918, when the responsibility was assumed by the National Park Service.

In 1909 an Army bridge inspection report stated "... all of these wooden bridges were built in the earlier days (1880s and 1890s) of road construction in the Park, the material being pine in all cases. The life of the pine in that altitude is not to exceed 12 to 15 years if clear from earth and moisture. Therefore, most of the structures now in the Park have reached their limit of safety for use as bridges."¹ The first four steel bridges in the park were constructed in 1901, followed by nine during 1903-04, four in 1910, and three in 1911.

The 1909 inspection report recommended that a "36[-foot] plate girder span on concrete abutments replace the large culvert pipe covered with rock filling, which had proved inadequate for water flow."² Prior to the culvert pipe, an A-truss wooden span crossed Obsidian Creek.³

DESCRIPTION

Obsidian Creek Bridge is of one span with a maximum span length of 35'. This span length is measured from center of support to center of support. The structure length is 38' from end of backwall to end of backwall. The deck width is 16'-5", while the bridge roadway from curb to curb is 14'-5" wide.⁴

Obsidian Creek Bridge is a small steel girder bridge with four transverse steel floor beams framing into the two main girders. These floor beams are not as deep as the flanking girders. The two in the middle are B 7/15 at 42.9 pounds per foot and the two on the ends are CI 15 by 3/8 at 33.9 pounds per foot. On top of the floor beams are six longitudinal steel stringers. The tops of these stringers are at the level of the top of the flanking girders. These stringers are B 11/9 at 21.8 pounds per foot at 2'-2 1/4" centers. The stringers are I-sections with a 9-inch height, a flange width of 4 1/4" and a flange thickness of 5/16". The floor beams act as transverse bracing for the flanking girders while diagonal tension rods framing into the floor beams act as longitudinal bracing. The girders are built up of riveted angles and plates while the floor beams and stringers are rolled sections connected with rivets. A girder is made up of 1/4"x36" plates surrounded by horizontal angles of 3"x4"x5/16" and vertical angles of 2"x3 1/4"x5/16".⁵

The deck of the bridge is of untreated timber running transversely on top of the stringers. This timber is in the form of 3"x12" planks. A 3"x12" plank runs longitudinally at the edges of the bridge on top of the deck for a wheel guard. A wearing surface of asphalt was laid over the deck planks. Presently the deck planks are not attached to the stringers.⁶

The abutments of Obsidian Creek Bridge are in the form of a flared U-shape. They are of gravity type and are not reinforced. The abutments rest on firm material, so pilings were not necessary. The bridge sits on four steel bearing plates resting on the abutments that provides a friction connection between the superstructure and substructure.

The unique feature of this bridge is its railing. The railing rises 4' from the deck and is composed of a lattice of steel straps riveted at the intersections. These rivets have steel circles over them. The end posts of this rail are ornamental with cast circular medallions and a spherical cap.

ENDNOTES

1.Captain Wildurr Willing, Corps of Engineers, U.S.A. "Report of Inspection of Bridges in the Yellowstone National Park, made September 24, 25, and 26, 1909."

2.Ibid.

3.Ibid.

4.Bridge Inspection Report, Obsidian Creek Bridge over Obsidian Creek, July 6, 1985, Federal Highway Administration, Western Direct Federal Division, U.S. Department of Transportation.

5.Bridge Safety Inspection Report, Obsidian Creek Bridge, Yellowstone National Park, Federal Highway Administration, Region 8, Office of Western Bridge Design, U.S. Department of Transportation.

6.Bridge Safety Report, 21 June 1978.